

increases and the pump cannot be stopped, operators change its pressure ratio to maintain flow, in accordance with the pump's performance curve. This reduces damaging vibration without interrupting process throughput. The filter is cleaned at a later, less disruptive time.

## Conclusion

Our quench oil pumps have had no shaft cracks since operators began monitoring their operation with Trendmaster 2000. Operators also use Trendmaster 2000 to monitor our liquid gas pumps, which have needed no repair in the 1 1/2 years since we replaced the cooling medium. Monitoring our equipment requires much less labor, and is much more effective, with Trendmaster 2000.

We are considering an upgrade at MG6, to Trendmaster 2000 for Windows, for its network capability. We are also evaluating Trendmaster 2000 Systems for use in two other plants. We have found that Trendmaster 2000 is easy to install, easy for operators to use, that it increases plant safety and reduces the risk of environmental contamination. Most importantly, it gives us the information we need to manage our machines and process more efficiently.

**We recovered our investment in Trendmaster 2000 in less than six months.**

We recently installed a comprehensive Bently Nevada machinery management system on MG6's large compressor trains. Now, these critical machines are continuously monitored by Bently Nevada 3300 Monitoring Systems. The monitors provide both steady state and transient machine data to a Bently Nevada Transient Data Manager #2 (TDM2) System. The TDM2 System is connected remotely to Bently Nevada's expert system, Engineer Assist™. Engineer Assist automatically analyzes the MG6 compressor trains and explains their condition in easily understood reports. With this new system, we continue extending Bently Nevada's machinery management philosophy throughout our plant. ■



## The advantages of redundant Keyphasor® transducers

by Tom Pfob

Corporate Product Service Manager  
Bently Nevada Corporation

Many customers now rely on Bently Nevada monitoring systems to provide much more than machinery protection. They have connected Transient Data Manager® and Dynamic Data Manager® communication processors to their monitoring systems and now rely on the system to indicate the current and future condition of their machinery.

Several pieces of information, such as 1X amplitude and phase, 2X amplitude and phase, Not 1X amplitude and machine speed, are critical for assessing machinery condition. This information is dependent on a Keyphasor® pulse.

If there is a problem with the Keyphasor transducer, the Keyphasor pulse cannot be developed and critical data is lost. The problem might be due to the failure of the transducer, the field wiring, or the transducer could even be damaged by a machine malfunction. If the Keyphasor information is lost due to a machine malfunction, you can lose your ability to diagnose the malfunction.

Many Keyphasor transducers are installed inside a machine case and may not be easily replaced. To safeguard critical data, we advise our customers to install redundant Keyphasor transducers. It may also be advantageous to install redundant Keyphasor transducers, even when the primary transducer is externally-mounted.

When installing redundant Keyphasor transducers, it is important to maintain the angular relationship of the probes, so that switching Keyphasor signals does not change the phase readings. It is also important to follow good engineering practices that would apply to any redundant transducer, such as running signal wires in separate conduits, using separate probe mounting brackets, maintaining probe tip separation, etc. It may even be a good idea to mount the Keyphasor transducers at opposite ends of the machine case to minimize the possibility that both would be destroyed during a machine malfunction.

All of the communication processors manufactured by Bently Nevada can automatically switch to the redundant Keyphasor signal if the primary Keyphasor signal is lost. This will help ensure that the critical data obtained from a Keyphasor signal is not lost.

For more information on installing Keyphasor transducers and proximity probes, please see the following two application notes:

- The Keyphasor, A necessity for Machinery Diagnosis (AN016)
- Proximity Probes and Related Accessories (AN028)

These application notes are available free from Bently Nevada and can be requested by checking the appropriate box on the Reader Service Card. ■